Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously Presented) A tissue-adhesive formulation comprising a naturally occurring or synthetic polymerisable and/or cross-linkable material in particulate form, the polymerisable and/or cross-linkable material being in admixture with particulate material comprising tissue-reactive functional groups.

2. (Previously Presented) A formulation according to Claim 1, wherein the ratio by weight of polymerisable and/or cross-linkable material to material comprising tissue-reactive functional groups is between 0.1:1 and 10:1.

3. (Previously Presented) A formulation according to Claim 2, wherein the ratio by weight of polymerisable and/or cross-linkable material to material comprising tissue-reactive functional groups is between 0.2:1 and 1:1.

4. (Previously Presented) A formulation according to Claim 1, wherein the tissue-reactive functional groups are selected from the group consisting of imido ester, p-nitrophenyl carbonate, N-hydroxysuccinimide ester, epoxide, isocyanate, acrylate, vinyl sulfone, orthopyridyl-disulfide, maleimide, aldehyde and iodoacetamide.

5. (Original) A formulation according to Claim 4, wherein the tissue-reactive functional groups are N-hydroxysuccinimide esters.

6. (Previously Presented) A formulation according to Claim 1, wherein the formulation contains one material comprising tissue-reactive functional groups.

7. (Previously Presented) A formulation according to Claim 1, wherein the formulation contains two materials comprising tissue-reactive functional groups.

8. (Currently amended) A formulation according to Claim 1, wherein the material comprising tissue-reactive functional groups is the reaction product ~~formed by derivatization~~ of (i) a polymer precursor comprising ~~residues of~~ two or more monomers, at least one of the monomers containing a carboxylic acid group or a group capable of being reacted with another material to form an acid functionality, and (ii) a reactant comprising the tissue-reactive functional group.

9. (Original) A formulation according to Claim 8, wherein all or substantially all of the available sites in the polymer precursor are derivatised.

10. (Previously presented) A formulation according to Claim 8, wherein the polymer precursor contains carboxylic acid or alcohol functional groups.

11. (Withdrawn) A formulation according to Claim 10, wherein the polymer precursor is selected from the group consisting of sucrose, cellulose and polyvinylalcohol.

12. (Cancelled)

13. (Previously Presented) A formulation according to Claim 8, wherein the monomers are selected from the group consisting of *N*-vinyl-2-pyrrolidone, acrylic acid, vinyl acetate, vinyl acetic acid, mono-2-(methacryloyloxy) ethyl succinate, methacrylic acid, 2-hydroxyethyl methacrylate, 2-hydroxypropyl methacrylate and (polyethylene glycol) methacrylate.

14. (Previously Presented) A formulation according to Claim 8, wherein polymerisation is initiated by a free radical initiator.

15. (Original) A formulation according to Claim 14, wherein the initiator is selected from the group consisting of benzoyl peroxide, 2,2'-azobisisobutyronitrile, lauroyl peroxide and peracetic acid.

16. (Previously Presented) A formulation according to Claim 13, wherein the polymer precursor is poly (N-vinyl-2-pyrrolidone-co-acrylic acid) co-polymer.

17. (Previously Presented) A formulation according to Claim 16, wherein the poly (N-vinyl-2-pyrrolidone-co-acrylic acid) co-polymer has a molar ratio of acrylic acid-derived units less than 0.60.

18. (Original) A formulation according to Claim 16, wherein the poly (N-vinyl-2-pyrrolidone-co-acrylic acid) co-polymer has a molar ratio of acrylic acid-derived units between 0.025 and 0.25.

19. (Previously Presented) A formulation according to Claim 8, wherein the polymer precursor is derivatised with N-hydroxysuccinimide to form the material comprising tissue-reactive functional groups.

20. (Previously Presented) A formulation according to Claim 1, wherein the material comprising tissue-reactive functional groups is an N-hydroxysuccinimide ester of poly(N-vinyl-2-pyrrolidone-co-acrylic acid) co-polymer.

21. (Previously Presented) A formulation according to Claim 20, wherein the material comprising tissue-reactive functional groups has a molar ratio of acrylic acid-derived units to vinyl pyrrolidone-derived units between 0.05–0.50:0.50–0.95.

22. (Previously Presented) A formulation according to Claim 1, wherein the concentration of material comprising tissue-reactive functional groups in the formulation is between 10 and 50% w/w.

23. (Previously Presented) A formulation according to Claim 1, wherein the polymerisable and/or cross-linkable material is selected from the group consisting of polysaccharides, polylactates, polyols and proteins, and derivatives thereof.

24. (Previously Presented) A formulation according to Claim 1, wherein the polymerisable and/or cross-linkable material is a chemically modified polyalkylene glycol containing multiple primary amino or thiol groups.

25. (Original) A formulation according to Claim 23, wherein the polymerisable and/or cross-linkable material is cross-linked.

26. (Previously Presented) A formulation according to Claim 23, wherein the polyymerisable and/or cross-linkable material is albumin.

27. (Previously Presented) A formulation according to Claim 26, wherein the albumin is porcine, bovine or human albumin.

28. (Previously presented) A formulation according to Claim 1, wherein the polymerisable and/or cross-linkable material is buffered to a pH greater than 7.

29. (Previously Presented) A formulation according to Claim 1, further comprising one or more components selected from the group of structural polymers, surfactants, and plasticisers.

30. (Previously Presented) A formulation according to Claim 1, wherein the particles that make up the formulation have a median size in the range 5μm to 500μm.

31. (Withdrawn) A sheet having a multilayer structure, said structure consisting of a core of a naturally occurring or synthetic polymeric material, the core being coated on at least one side thereof with a tissue-adhesive formulation according to Claim 1.

32. (Withdrawn) A sheet according to Claim 31, wherein the core comprises a polymeric material selected from the group consisting of polymers or co-polymers based on α-hydroxy acids.

33. (Withdrawn) A sheet according to Claim 31, wherein the core comprises polymeric material selected from the group consisting of alginates, polyhydroxyalkanoates, polyamides, polyethylene, propylene glycol, water-soluble glass fibre, starch, cellulose, collagen, pericardium, albumin, polyester, polyurethane, potyetheretherketone, polypropylene and polytetrafluoroethylene.

34. (Withdrawn) A sheet according to Claim 31, wherein the core is apertured.

35. (Withdrawn) A sheet according to Claim 34, wherein the sheet has a regular array of apertures, and the apertures are between 50μm and 2mm in diameter and adjacent apertures are formed at a centre-to-centre separation of between 100μm and 5mm.

36. (Withdrawn) A sheet according to Claim 35, wherein the apertures account for between 5% and 80% of the overall surface area of the core.

37. (Withdrawn) A sheet according to Claim 31, wherein the core has a thickness of 0.005 to 5mm.

38. (Withdrawn) A sheet according to Claim 31, wherein the tissue-adhesive formulation is applied to the core by mechanically compressing a blend of material

containing tissue-reactive functional groups and polymerisable and/or cross-linkable material, both in particulate form, onto one or both sides of the core.

39. (Withdrawn) A sheet according to Claim 31, wherein the core is coated on both sides with the tissue-adhesive formulation.

40. (Withdrawn) A sheet according to Claim 31, wherein one surface of the sheet is coated with a non-adhesive material.

41. (Withdrawn) A sheet according to Claim 40, wherein the non-adhesive material is selected from the group consisting of polyethylene glycols, polylactide and poly(lactide-co-glycolide).

42. (Withdrawn) A sheet according to Claim 41, wherein the non-adhesive coating includes a visibly-absorbing chromophore.

43. (Withdrawn) A sheet according to Claim 42, wherein the visibly-absorbing chromophore is methylthioninium chloride.

44. (Withdrawn) A sheet according to Claim 40, wherein the coating of non-adhesive material is apertured.

45-52 (Canceled)

53. (Withdrawn) A method of joining a tissue surface to another tissue, or of sealing a tissue surface, which method comprises applying to the tissue surface a formulation according to Claim 1.

54-62 (Canceled)

63. (Withdrawn) A method as claimed in Claim 53, wherein the formulation is present on a sheet having a multilayer structure consisting of a core formed of a naturally occurring or synthetic polymeric material, with the formulation being present as a coating on at least one side of the core.

64. (Withdrawn) A method as claimed in Claim 53, wherein the method is carried out to enhance wound healing, promote wound closure, provide reinforcement in hernia

repair procedures, seal joint tubular structures, seal resected tissue sections, seal air leaks in lung tissue, promote haemostasis, prevent post-surgical adhesions, or deliver a drug or other therapeutic agent.

65. (Withdrawn) A method of joining a tissue surface to another tissue, or of sealing a tissue surface, which method comprises applying to the tissue surface a composition according to Claim 45.

66. (Withdrawn) A method as claimed in Claim 65, wherein the method is carried out to enhance wound healing, promote wound closure, provide reinforcement in hernia repair procedures, seal joint tubular structures, seal resected tissue sections, seal air leaks in lung tissue, promote haemostasis, prevent post-surgical adhesions, or deliver a drug or other therapeutic agent.

67. (Withdrawn) A formulation according to Claim 1, which consists essentially of said naturally occurring or synthetic polymerisable and/or cross-linkable material in particulate form and said particulate material comprising tissue-reactive groups.